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| EXAMINER |
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WONG, EDNA

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| ART UNIT | PAPER NUMBER |
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1759

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12/27/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/566,913

Applicant(s)

DAHMS ET AL.

Examiner

EDNA WONG

Art Unit

1759

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No.(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No.(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

This is in response to the Amendment dated December 10, 2010. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Response to Arguments

Claim Objections

Claims **1, 7 and 31** have been objected to because of minor informalities.

The objection of claims 1, 7 and 31 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

I. Claims **31 and 32** have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The rejection of claims 31 and 32 under 35 U.S.C. 112, first paragraph, has been withdrawn in view of Applicants' amendment.

II. Claims **11 and 28** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention.

The rejection of claims 11 and 28 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 102/103

I. Claim **31** has been rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1).

The rejection of claim 31 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cobley et al. has been withdrawn in view of Applicants' amendment. Claim 31 has been cancelled.

II. Claim **31** has been rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1).

The rejection of claim 31 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Gabe et al. has been withdrawn in view of Applicants' amendment. Claim 31 has been cancelled.

Claim Rejections - 35 USC § 103

I. Claims **1, 3, 8-16, 19-20 and 28-30** have been rejected under 35 U.S.C. 103(a)

as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1).

The rejection of claims 1, 3, 8-16, 19-20 and 28-30 under 35 U.S.C. 103(a) as being unpatentable over Cobley et al. has been withdrawn in view of Applicants' amendment. Claims 1, 3, 8-16, 19-20 and 28-30 have been cancelled.

II. Claims **17 and 18** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) as applied to claims 1, 3, 8-16, 19-20 and 28-30 above, and further in view of **Todt et al.** (US Patent No. 3,743,584).

The rejection of claims 17 and 18 under 35 U.S.C. 103(a) as being unpatentable over Cobley et al. as applied to claims 1, 3, 8-16, 19-20 and 28-30 above, and further in view of Todt et al. has been withdrawn in view of Applicants' amendment. Claims 17 and 18 have been cancelled.

III. Claims **24-26** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) as applied to claims 1, 3, 8-16, 19-20 and 28-30 above.

The rejection of claims 24-26 under 35 U.S.C. 103(a) as being unpatentable over Cobley et al. as applied to claims 1, 3, 8-16, 19-20 and 28-30 above has been withdrawn in view of Applicants' amendment. Claims 24-26 have been cancelled.

IV. Claims **1, 4-16, 19-20, 28 and 30** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1).

The rejection of claims 1, 4-16, 19-20, 28 and 30 under 35 U.S.C. 103(a) as being unpatentable over Gabe et al. has been withdrawn in view of Applicants' amendment. Claims 1, 4-16, 19-20, 28 and 30 have been cancelled.

V. Claims **17 and 18** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1) as applied to claims 1, 4-16, 19-20 and 28 above, and further in view of **Todt et al.** (US Patent No. 3,743,584).

The rejection of claims 17 and 18 under 35 U.S.C. 103(a) as being unpatentable over Gabe et al. as applied to claims 1, 4-16, 19-20 and 28 above, and further in view of Todt et al. has been withdrawn in view of Applicants' amendment. Claims 17 and 18 have been cancelled.

VI. Claims **24-26** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1) as applied to claims 1, 4-16, 19-20 and 28 above.

The rejection of claims 24-26 under 35 U.S.C. 103(a) as being unpatentable over Gabe et al. as applied to claims 1, 4-16, 19-20 and 28 above has been withdrawn in

view of Applicants' amendment. Claims 24-26 have been cancelled.

VIII. Claim **32** has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Gabe et al.** (US Patent Application Publication No. 2003/0102226 A1) as applied to claim 31 above.

The rejection of claim 32 under 35 U.S.C. 103(a) as being unpatentable over Gabe et al. as applied to claim 31 above has been withdrawn in view of Applicants' amendment. Claim 32 has been cancelled.

Response to Amendment

Claim Objections

Claims **33 and 43** are objected to because of the following informalities:

Claim 33

line 19, it is suggested that the word -- and -- be inserted after the word "solution;".

Claim 43

line 19, it is suggested that the word -- and -- be inserted after the word "solution;".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

I. Claims **33-44** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 33

- line 2, recites “to enhance the appearance of the item”.

Applicants’ specification discloses that:

The current brighteners, wetting agents or levellers also enhance other physical properties such as the ductility of the layers for example. Examples of these compounds are oxygen-containing, high molecular additives and water soluble sulfur compounds (page 10, [0056]).

It appears that the physical properties are enhanced by the method instead of the appearance.

- lines 13-16, recite “with the proviso that the number of radicals R1, R2, R3, R4, R5 and R6 which are halogen ranges from 1-5 and that the number of radicals R1, R2, R3, R4, R5 and R6 which are hydrogens ranges from 1-5.”

Applicants’ specification does not disclose this proviso.

Claim 39

lines 1-3, recite “wherein said copper ions are present in a copper containing compound that is present in said solution in an amount from 160,000 to 400,000 times the amount of said at least one aromatic halogen derivative.”

Applicants’ specification discloses 0.1 mg of 4-chloro-3,5-dimethylphenol and 200 g/L of copper sulfate (page 18, Example 1b); and 0.5 mg of 2-chlorobenzene and 80 g/L of copper sulfate (page 19, Example 2b).

The 0.1 mg of 4-chloro-3,5-dimethylphenol and 200 g/L of copper sulfate (page 18, Example 1b) would give two individual ratios of the copper containing compound and the at least one aromatic halogen derivative. The two individual ratios do not constitute a range.

Claim 42

lines 1-2, recite “wherein the at least one aromatic halogen derivative is present in an amount that is from about 1:2000000.”

Applicants’ specification does not disclose this amount.

Claim 43

• line 2, recites “to enhance the appearance of the item”.

Applicants’ specification discloses that:

The current brighteners, wetting agents or levellers also enhance other physical properties such as the ductility of the layers for example. Examples of these compounds

are oxygen-containing, high molecular additives and water soluble sulfur compounds (page 10, [0056]).

It appears that the physical properties are enhanced by the method instead of the appearance.

- lines 13-16, recite “with the proviso that the number of radicals R1, R2, R3, R4, R5 and R6 which are halogen ranges from 1-5 and that the number of radicals R1, R2, R3, R4, R5 and R6 which are hydrogens ranges from 1-5.”

Applicants' specification does not disclose this proviso.

The Examiner has carefully considered the entire specification as originally filed, however, there is found no literal support in the specification for the new limitations in the new claims. Applicants have not provided the page number and line numbers from the specification as to where the newly added limitations are coming from. *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984).

II. Claims **33-44** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33

line 19, it appears that “an item to be coated” is the same as the metal or plastic surfaces of an item recited in claim 33, lines 1-2. However, the claim language is

unclear as to whether it is.

line 20, "the copper" lacks antecedent basis.

Claim 34

line 1, the word "including" does not further limit the method recited in claim 33,
line 2. It is suggested that the word "including" be amended to the words -- further
comprising --.

Claim 36

line 1, the word "comprising" does not further limit the method recited in claim 33,
line 2. It is suggested that the word -- further -- be inserted before the word
"comprising".

Claim 40

line 1, the word "including" does not further limit the method recited in claim 33,
line 2. It is suggested that the word "including" be amended to the words -- further
comprising --.

Claim 43

line 19, it appears that "an item to be coated" is the same as the metal or plastic

surfaces of an item recited in claim 43, lines 1-2. However, the claim language is unclear as to whether it is.

line 20, "the copper" lacks antecedent basis.

III. Claim **37** is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: between (i) forming a bisulfite adduct with the CO group of the aldehyde radical and (ii) partial formation of α -hydroxysulfonates.

Claim 36

lines 1-3, recite "improving the water solubility of said aromatic halogen derivatives by forming a bisulfite adduct with the CO group of the aldehyde radical."

Claim 37

lines 1-2, recite "said improving the water solubility of said aromatic halogen derivative comprises partial formation of α -hydroxysulfonates."

Does forming a bisulfite adduct with the CO group of the aldehyde radical result in the partial formation of α -hydroxysulfonates?

Claim Rejections - 35 USC § 103

I. Claims **33-39 and 41-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) in view of **McCoy** (US Patent No. 4,417,956).

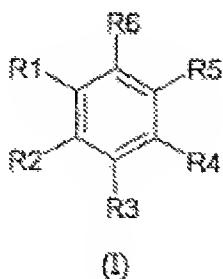
Cobley teaches a method for producing a bright copper coating on metal or plastic surfaces of an item to enhance the appearance of the item, the method comprising:

- preparing an aqueous acidic solution (= plating baths are aqueous. The pH range of the bath may range from 0 to about 14) [page 5, [0051]] containing:

- copper ions (page 5, [0052]),
- at least one oxygen-containing, high molecular additive (= oxygen containing high molecular weight compounds) [page 4, [0047]],
- an acid (= inorganic acids employed include, but are not limited to, sulfuric, hydrochloric acid, nitric acid, phosphoric acid and the like) [page 5,

[0051]], and

- at least one water soluble sulfur compound (= sulfur compounds) [page 4, [0046]],
- characterized in that the solution additionally contains at least one aromatic halogen derivative having the general formula:



wherein R1, R2, R3, R4, R5 and R6 are each independently radicals selected from the group consisting of hydrogen, aldehyde, acetyl, hydroxy, hydroxyalkyl having 1-4 carbon atoms, alkyl having 1-4 carbon atoms and halogen, with the proviso that the number of radicals R1, R2, R3, R4, R5 and R6 which are halogen ranges from 1-5 and that the number of radicals R1, R2, R3, R4, R5 and R6 which are hydrogens ranges from 1-5 (= R¹-CHO) [page 3, [0029] to [0032]];

- bringing an item to be coated into contact with the solution (= workpiece **16** (cathode), for example, a circuit board, and anodes **18**, for example insoluble titanium anodes coated with iridium dioxide, are immersed into metal plating bath **14**) [page 6, [0063]]; and

- applying a cathodic current density (= generally, anode and cathode current densities may vary from about 1 to about 1000 amps/ft² (ASF)) for a duration of time to plate the copper onto the surface of said item (= plating is continued for a time sufficient to form a deposit of desired thickness) [page 6, [0060]].

The cathodic current density applied from about 0.5 to 12 A/dm² (= generally, anode and cathode current densities may vary from about 1 to about 1000 amps/ft²

(ASF)) [page 6, [0060]].

The at least one aromatic halogen derivative is present in an amount that is from about 1:2000000 (= the aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath) [page 4, [0040]].

The method of Cobley differs from the instant invention because Cobley does not disclose the following:

- a. Wherein prior to the addition of said aromatic halogen derivative to said aqueous acidic solution, said aromatic halogen derivative is dissolved in an alcohol, as recited in claim **33**.
- b. The method comprises improving the water solubility of said aromatic halogen derivatives by forming a bisulfite adduct with the CO group of the aldehyde radical, as recited in claim **36**.
- c. Wherein said improving the water solubility of said aromatic halogen derivative comprises partial formation of α -hydroxysulfonates, as recited in claim **37**.

Cobley teaches that:

The additive preserving aldehydes may be added to plating baths by any suitable method employed to add components to a bath. One method is to mix the compounds of the foregoing formula into the plating bath with the other bath components and additives (page 4, [0041]).

Like Cobley, **McCoy** teaches an electroplating process (col. 1, lines 14-32).

McCoy teaches that:

It also has been found, that in addition to the aforementioned metal ions certain

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organic substances such as aldehydes act in a cooperative manner with the desirable trace metal ions to enhance the electrodeposit. Aldehydes such as anisaldehyde, benzaldehyde, crotonaldehyde, veratraldehyde etc., in face, any aldehyde or compound containing a carbonyl group which is capable of producing a smoothening and brightening effect in a commercial zinc plating process, appears to be capable of promoting brightness in cooperation with the metal ions mentioned in the preceding paragraphs. The quantity of compound required varies from 0.01 g/L to about 0.25 g/L and may vary with the compound selected. The aldehyde used may be added as the bisulfite adjunct or added dissolved in a suitable organic solvent, such as alcohol, glycol or a commercial solvent such as methoxy-ethanol, ethoxy-ethanol, etc. (col. 7, lines 22-38).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by Cobley with (a) to (c) above because adding the aldehyde as the bisulfite adjunct or added dissolved in a suitable organic solvent, such as alcohol, glycol or a commercial solvent such as methoxy-ethanol, ethoxy-ethanol, etc. would have been a method employed to add an aldehyde to a bath as taught by McCoy (col. 7, lines 22-38), which would have accomplished what Cobley had proposed.

d. Wherein the method includes alkalinizing said aqueous acidic solution to promote the dissolving of the said aromatic halogen derivative in said aqueous acidic solution, as recited in claim **34**.

e. Wherein alkalinizing said aqueous acidic solution includes forming alkali halogen phenolates by adding water soluble salts to said solution, as recited in claim **35**.

Cobley teaches:

The pH range of the bath may range from 0 to about 14 (page 5, [0051]).

Acids may be added to the plating baths to obtain a pH range of from about 0 to about 8.0 (page 5, [0054]).

McCoy teaches:

A pH of about 10 to 13.5 (col. 2, lines 56-57).

The bases that may be used to adjust the pH of the plating baths are preferably the alkaline metal hydroxides of sodium, potassium and lithium. The use of ammonium hydroxide is not recommended because it does not increase the pH to the level required for successful operation of the inventive process. In addition, ammonium hydroxide is difficult to remove as the copper complex from the effluent in the pollution treatment process. In addition to the alkaline metal hydroxides, amines also may be used but they also can cause difficulties in the subsequent pollution treatment process (col. 6, lines 21-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by Cobley with (d) and (e) above because if acids were added to the plating baths to obtain a pH range of from about 0 to about 8.0, then a base would have been added to the plating baths to obtain a pH range of from 9 to 14 as taught by McCoy (col. 2, lines 56-57; and col. 6, lines 21-31).

It has been held that the selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination (MPEP § 2144.06 and § 2144.07).

Furthermore, the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same

advantage or result discovered by the Applicants. *In re Linter* 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 US 904 (1991) [MPEP § 2144].

f. Wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.5 mg/l, as recited in claim **38**.

Cobley teaches:

Adding one or more of the aldehyde compounds of the present invention to metal plating baths prevent or reduce the degradation of additives in the metal plating baths. Preferably, the metal plating baths are electroplating baths. The aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath. Preferably, the compounds are generally employed in plating baths of from about 0.01 g/L to about 20.0 g/L (page 4, [0040]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of the at least one aromatic halogen derivative having the formula (I) described by Cobley with wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.5 mg/l because the concentration of the at least one aromatic halogen derivative having the formula (I) is a result-effective variable and one having ordinary skill in the art has the skill to calculate the concentration of the at least one aromatic halogen derivative having the formula (I) that would have determined the success of the desired reaction to occur, i.e., to prevent or reduce the degradation of additives in the metal plating baths (MPEP § 2141.03 and § 2144.05).

Cobley teaches that the aldehyde compounds are added in amounts of generally

from about 0.001 g/L to about 100 g/L of bath. The word “about” permits some tolerance or flexibility to the claimed range. *In re Ayers* 69 USPQ 109 and *In re Erickson* 145 USPQ 207 (MPEP § 2173.05(b)(A)).

g. Wherein said copper ions are present in a copper containing compound that is present in said solution in an amount from 160,000 to 400,000 times the amount of said at least one aromatic halogen derivative, as recited in claim **39**.

Cobley teaches;

Adding one or more of the aldehyde compounds of the present invention to metal plating baths prevent or reduce the degradation of additives in the metal plating baths. Preferably, the metal plating baths are electroplating baths. The aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath. Preferably, the compounds are generally employed in plating baths of from about 0.01 g/L to about 20.0 g/L (page 4, [0040]).

Metal ions range in concentration in the plating baths of from about 0.010 g/L to about 200 g/L, preferably from about 0.5 g/L to about 100 g/L. When copper is employed the amount of copper may range from about 0.01 to about 100 g/L. Preferably, copper ranges from about 0.10 g/L to about 50 g/L. When the bath of the present invention is used in a non-high speed plating process, the amount of copper present in the bath ranges from about 0.02 g/L to about 25 g/L. When the bath of the present invention is used in a high speed plating process, the amount of copper present in the bath ranges from about 1.0 g/L to about 100 g/L, preferably from about 2.0 g/L to about 50 g/L (page 5, [0053]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of the copper containing compound described by Cobley with wherein said copper ions are present in a copper containing compound that is present in said solution in an amount from 160,000 to 400,000 times the amount of said at least one aromatic halogen derivative because the

concentration of the copper containing compound is a result-effective variable and one having ordinary skill in the art has the skill to calculate the concentration of the copper containing compound that would have determined the success of the desired reaction to occur, i.e., to prevent or reduce the degradation of additives in the metal plating baths and where the bath is used - in a non-high speed plating process or in a high speed plating process (MPEP § 2141.03 and § 2144.05).

The Applicant has a different reason for, or advantage resulting from doing what the prior art relied upon has suggested, it is noted that it is well settled that this is not demonstrative of nonobviousness. *In re Kronig* 190 USPQ 425, 428 (CCPA 1976); *In re Linter* 173 USPQ 560 (CCPA 1972); the prior art motivation or advantage may be different than that of Applicants while still supporting a conclusion of obviousness. *In re Wiseman* 201 USPQ 658 (CCPA 1979); *Ex parte Obiaya* 227 USPQ 58 (Bd. of App. 1985) [MPEP § 2144].

II. Claim **40** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) in view of **McCoy** (US Patent No. 4,417,956) as applied to claims 33-39 and 41-42 above, and further in view of **Wang** (US Patent No. 6,391,166 B1).

Cobley and McCoy are as applied above and incorporated herein.

The method of Cobley differs from the instant invention because Cobley does not disclose wherein the method includes heating the solution to a temperature of from

about 15° to 50° C, as recited in claim **40**.

Cobley teaches that the copper baths are maintained in a temperature range of from about 20° C to about 80° C (page 6, [0060]).

Like Cobley, **Wang** teaches an electroplating process. Wang teaches that the bath temperature is controlled by heater **42**, temperature sensor **40**, and heat controller **44** (col. 18, lines 47-48).

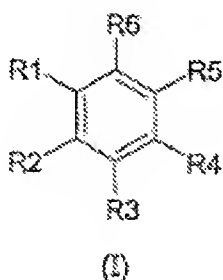
It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by Cobley by heating the solution to a temperature of from about 15° to 50° C because a heater would have controlled the bath temperature as taught Wang (col. 18, lines 47-48), and would have accomplished what Cobley had proposed.

III. Claims **43 and 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Cobley et al.** (US Patent Application Publication No. 2003/0085132 A1) in view of **McCoy** (US Patent No. 4,417,956).

Cobley teaches a method for producing a bright copper coating on metal or plastic surfaces of an item to enhance the appearance of the item, the method comprising:

- preparing an aqueous acidic solution (= plating baths are aqueous. The pH range of the bath may range from 0 to about 14) [page 5, [0051]] containing:
 - copper ions (page 5, [0052]),

- at least one oxygen-containing, high molecular additive (= oxygen containing high molecular weight compounds) [page 4, [0047]],
- an acid (= inorganic acids employed include, but are not limited to, sulfuric, hydrochloric acid, nitric acid, phosphoric acid and the like) [page 5, [0051]], and
- at least one water soluble sulfur compound (= sulfur compounds) [page 4, [0046]],
- characterized in that the solution additionally contains at least one aromatic halogen derivative having the general formula:



wherein R1, R2, R3, R4, R5 and R6 are each independently radicals selected from the group consisting of hydrogen, aldehyde, acetyl, hydroxy, hydroxyalkyl having 1- 4 carbon atoms, alkyl having 1-4 carbon atoms and halogen, with the proviso that the number of radicals R1, R2, R3, R4, R5 and R6 which are halogen ranges from 1-5 and that the number of radicals R1, R2, R3, R4, R5 and R6 which are hydrogens ranges from 1-5 (= R¹-CHO) [page 3, [0029] to [0032]];

- bringing an item to be coated into contact with the solution (= workpiece **16** (cathode), for example, a circuit board, and anodes **18**, for example insoluble titanium

anodes coated with iridium dioxide, are immersed into metal plating bath **14**) [page 6, [0063]]; and

- applying a cathodic current density (= generally, anode and cathode current densities may vary from about 1 to about 1000 amps/ft² (ASF)) for a duration of time to plate the copper onto the surface of said item (= plating is continued for a time sufficient to form a deposit of desired thickness) [page 6, [0060]];

wherein the at least one aromatic halogen derivative having the formula (I) is not any one of 2-chloro-4-hydroxybenzaldehyde, 4- chlororesorcinol and 3-chlorophenol (= R¹-CHO) [page 3, [0029] to [0032]].

The method of Cobley differs from the instant invention because Cobley does not disclose the following:

a. Wherein prior to the addition of said aromatic halogen derivative to said aqueous acidic solution, said aromatic halogen derivative is dissolved in an alcohol, as recited in claim **43**.

Cobley teaches that:

The additive preserving aldehydes may be added to plating baths by any suitable method employed to add components to a bath. One method is to mix the compounds of the foregoing formula into the plating bath with the other bath components and additives (page 4, [0041]).

Like Cobley, **McCoy** teaches an electroplating process (col. 1, lines 14-32).

McCoy teaches that:

It also has been found, that in addition to the aforementioned metal ions certain

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organic substances such as aldehydes act in a cooperative manner with the desirable trace metal ions to enhance the electrodeposit. Aldehydes such as anisaldehyde, benzaldehyde, crotonaldehyde, veratraldehyde etc., in face, any aldehyde or compound containing a carbonyl group which is capable of producing a smoothening and brightening effect in a commercial zinc plating process, appears to be capable of promoting brightness in cooperation with the metal ions mentioned in the preceding paragraphs. The quantity of compound required varies from 0.01 g/L to about 0.25 g/L and may vary with the compound selected. The aldehyde used may be added as the bisulfite adjunct or added dissolved in a suitable organic solvent, such as alcohol, glycol or a commercial solvent such as methoxy-ethanol, ethoxy-ethanol, etc. (col. 7, lines 22-38).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by Cobley with wherein prior to the addition of said aromatic halogen derivative to said aqueous acidic solution, said aromatic halogen derivative is dissolved in an alcohol because adding the aldehyde as the bisulfite adjunct or added dissolved in a suitable organic solvent, such as alcohol, glycol or a commercial solvent such as methoxy-ethanol, ethoxy-ethanol, etc. would have been a method employed to add an aldehyde to a bath as taught by McCoy (col. 7, lines 22-38), which would have accomplished what Cobley had proposed.

b. Wherein the concentration of the at least one aromatic halogen derivative having the formula (I) is less than 1.0 mg/L, as recited in claim **43**.

c. Wherein the concentration of the at least one aromatic halogen derivative having the formula (I) ranges from 0.005 to 0.9 mg/l, as recited in claim **44**.

Cobley teaches:

Adding one or more of the aldehyde compounds of the present invention to metal plating baths prevent or reduce the degradation of additives in the metal plating baths. Preferably, the metal plating baths are electroplating baths. The aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath. Preferably, the compounds are generally employed in plating baths of from about 0.01 g/L to about 20.0 g/L (page 4, [0040]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of the at least one aromatic halogen derivative having the formula (I) described by Cobley with (b) and (c) above because the concentration of the at least one aromatic halogen derivative having the formula (I) is a result-effective variable and one having ordinary skill in the art has the skill to calculate the concentration of the at least one aromatic halogen derivative having the formula (I) that would have determined the success of the desired reaction to occur, i.e., to prevent or reduce the degradation of additives in the metal plating baths (MPEP § 2141.03 and § 2144.05).

Cobley teaches that the aldehyde compounds are added in amounts of generally from about 0.001 g/L to about 100 g/L of bath. The word "about" permits some tolerance or flexibility to the claimed range. *In re Ayers* 69 USPQ 109 and *In re Erickson* 145 USPQ 207 (MPEP § 2173.05(b)(A)).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDNA WONG whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edna Wong/
Primary Examiner
Art Unit 1759

EW
December 19, 2010